Amendments to the Claims:

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1-33. (Cancelled)

34. (New) A method for detecting a PXE mutation in a patient by establishing if a mutation in an MRP6 gene is associated with PXE, the method comprising the steps of:

a) interrogating an MRP6 nucleic acid in a patient sample for the presence of a mutation;

b) if present, determining if the mutation is a co-segregator with a PXE phenotype; and

c) identifying said patient as having a PXE mutation if a mutation is present in said MRP6 nucleic acid and the mutation is a co-segregator with said PXE phenotype.

35. (New) The method according to claim 34, wherein the said patient sample is selected from the group consisting of blood, saliva, amniotic fluid, and tissue.

36. (New) The method according to claim 35, wherein the said patient sample is blood.

37. (New) The method according to claim 34 wherein said step a) comprises performing a nucleic acid sequence scanning assay.

38. (New) The method according to claim 37, wherein said scanning assay is selected from the group consisting of SSCP, DGGE, RFLP, LCR, DHPLC, and enzymatic cleavage.

39. (New) The method according to claim 34, wherein said step a) comprises a specific mutation detection assay.

40. (New) The method according to claim 39, wherein said detection assay is selected from the group consisting of oligonucleotide hybridization and primer extension assays.

41. (New) The method according to claim 34, wherein said step a) comprises a nucleic acid sequencing assay.

42. (New) The method according to claim 41, wherein said assay detects the presence of a mutation selected from the group consisting of a deletion, a substitution, an insertion, and a rearrangement.

43. (New) The method according to claim 34, wherein said mutation is a non-conserved amino acid substitution.

44. (New) The method according to claim 34, wherein said mutation is in a splice site in an intron.

45. (New) The method according to claim 34, wherein said mutation is in the promoter region of the MRP6 gene.

46. (New) The method according to claim 34, wherein said mutation is in a polyA site of the MRP6 gene

47. (New) The method according to claim 34, wherein said mutation is in an exon of the MRP6 gene.

48. (New) The method according to claim 47, wherein said exon is selected from exons 1-31 of the MRP6 gene

49. (New) The method according to claim 34, wherein said nucleic acid is selected from the group consisting of mRNA, genomic DNA, and cDNA.

50. (New) The method according to claim 34, wherein said step a) comprises a hybridization assay.

51. (New) The method according to claim 34, wherein said step b) comprises screening the mutation against a control panel of MRP6 genes isolated from normal individuals.

52. (New) The method according to claim 34, wherein said step b) comprises comparing the mutation with a list of known PXE mutations.

53. (New) The method according to claim 34, wherein the said PXE phenotype comprises a skin manifestation.

54. (New) The method according to claim 53, wherein the said skin manifestation comprises a skin lesion found in at least one of the areas in the group consisting of face, neck, axilla, antecubital fossa, popliteal fossa, groin and periumbilical.

55. (New) The method according to claim 53, wherein the said skin manifestation comprises a laxity and a loss of elasticity of the skin found in at least one of the areas in the group consisting of face, neck, axilla, antecubital fossa, popliteal fossa, groin and periumbilical.

56. (New) The method according to claim 53, wherein the said skin manifestation comprises the calcification of fragmented elastic fibers in the mid- and lower dermis.

57. (New) The method according to claim 34, wherein said PXE phenotype is an ocular manifestation.

58. (New) The method according to claim 57, wherein said ocular manifestation comprises at least one of the group consisting of retinal hemorrhage; angloid streaks; and the accumulation of abnormal elastic fibers in the Bruch's membrane.

59. (New) The method according to claim 34, wherein said PXE phenotype comprises a cardiovascular manifestation.

60. (New) The method according to claim 59, wherein said cardiovascular manifestation comprises at least one of the group consisting of premature atherosclerotic changes; intimal fibroplasia; early myocardial infarction; fibrous thickening of the endocardium; fibrous thickening of the atrioventricular valves; and atrial septal aneurysm.

61. (New) The method according to claim 34, wherein said PXE phenotype comprises gastrointestinal bleeding.

62. (New) The method according to claim 34, wherein said PXE phenotype comprises the mineralization of the elastic fibers in at least one of the group consisting of skin; arteries; and retina.

63. (New) A method for screening a patient for the presence of a PXE mutation, the method comprising the steps of:

a) interrogating an MRP6 nucleic acid in a patient sample for the presence of a mutation known to be a co-segregator with a PXE phenotype; and

b) identifying said patient as having a PXE mutation if the mutation from step a) is detected in said MRP6 nucleic acid.

64. (New) The method according to claim 63, wherein said mutation is a mutation in codon 1141.

65. (New) The method according to claim 63, wherein said mutation is a deletion of base 3775.

66. (New) The method according to claim 63, wherein said mutation is in a codon selected from the group consisting of 1114, 1138, 1141, 1298, 1302, 1303, 1314, and 1321.

67. (New) A method for identifying a patient at risk of having children with PXE, the method comprising the steps of:

a) interrogating an MRP6 nucleic acid in a patient sample for the presence of an MRP6 allele known to be a co-segregator with a PXE phenotype; and

b) identifying said patient as being at risk of having children with PXE if the allele from step a) is detected in said MRP6 nucleic acid.

68. (New) A method for identifying a patient at risk of developing a PXE associated symptom, the method comprising the steps of:

a) interrogating an MRP6 nucleic acid in a patient sample for the presence of an MRP6 allele known to be a co-segregator with a PXE phenotype; and

b) identifying said patient as being at risk of developing a PXE associated symptom if the allele from step a) is detected in said MRP6 nucleic acid.

69. (New) The method according to claim 68, wherein said PXE associated symptom is cardiovascular disease.

70. (New) The method according to claim 68, wherein said PXE associated symptom is macular degeneration.

71. (New) A method for diagnosing PXE in a patient, the method comprising the steps of:

a) interrogating an MRP6 nucleic acid in a patient sample for the presence of a pair of two MRP6 alleles the pair known to co-segregate with a PXE phenotype; and

b) diagnosing said patient as having PXE if the pair of alleles from step a) are detected in said MRP6 nucleic acid.

72. (New) The method of claim 71, wherein said patient is a homozygous PXE patient.